

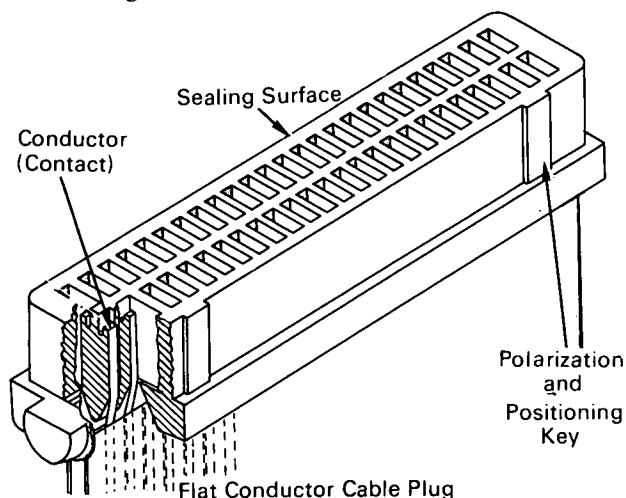
NASA TECH BRIEF



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Flat Conductor Cable Connector with Contact Separation Seal

Users of flat conductor cables will be interested in this new cable connector, in which each pair of contact elements is isolated by plastic cells and the mating interface is sealed by an elastic gasket. So insulated, the connector may be operated under high vacuum conditions at voltages up to 600 V ac without electrical leakage or intercontact ionization.



Additional advantages are gained because the electrical contact surfaces of the plug are recessed from the interface in individual cells. This prevents accidental shorting against metal objects, makes the plug electrically shockproof, and excludes surface contamination of the contacts via handling with fingers.

The plug half of the connector, shown in the drawing, has a one-piece body, with grooves and partitions to facilitate cable insertion. After stripping, inserting, and securing the flat conductor cable, potting the rear of the plug provides stress relief for the cable and a moisture seal for the contacts.

The receptacle half (not shown) has a metal housing, contact springs potted and sealed in place, a single retainer clip, and inner and outer sealing gaskets. Mating keys assure proper insertion polarity for plug and shell. The design provides many key positions. The shell can be cast or manufactured from profiled extruded stock. Plug and shell can be equipped with electromagnetic shielding.

Simplicity of the design of the new connector facilitates low cost manufacturing. Higher contact force and shorter contact travel (implying contact wear or chance for the contact spring to stick) improve reliability. The redundant contact spring is shorter than that of the older design, causing less voltage drop and less heat generation. The smaller size of the new connector reduces the mounting area by 33% and weight by 40%.

Notes:

1. Historical development of flat conductor cables is reported in NASA SP-5043, Flat Conductor Cable Technology, 1968, for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402: price \$0.40.
2. Information on the use of flat conductor cables is compiled in NASA SP-5924 (01), Tools, Fixtures, and Test Equipment for Flat Conductor Cables, 1968, for sale by the Clearinghouse for Federal Scientific and Technical Information, Springfield, Virginia 22151: price \$1.00.
3. Requests for further information may be directed to:

Technology Utilization Officer
Code A&TS-TU
Marshall Space Flight Center
Huntsville, Alabama 35812
Reference: B70-10387

(continued overleaf)

Patent status:

Inquiries about obtaining rights for the commercial use of this invention may be made to NASA, Code GP, Washington, D.C. 20546.

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